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10/699,039	10/31/2003	Juozas Vidas Grazulevicius	3216.32US01	1192

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EXAMINER	
DOTE, JANIS L	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,039	GRAZULEVICIUS ET AL.	
	Examiner	Art Unit	
	Janis L. Dote	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,2,4-9,11-16 and 18-22* is/are allowed.

6)☒ Claim(s) *23-25* is/are rejected.

7)☒ Claim(s) *3,10 17, and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/1/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-14 and 23-26, drawn to (a) organophotoreceptors, (b) electrophotographic imaging apparatuses, and (c) organic compounds, classified in class 430, subclass 74, class 399, subclass 159, and class 548, subclass 444, and class 564, subclass 251, respectively.

II. Claims 15-22, drawn to image forming methods, classified in class 430, subclass 117.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions Ia (organophotoreceptor) and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product as claimed can be used in a materially different process, such as an imaging process comprising the steps of developing an electrostatic latent image formed on the

organophotoreceptor of Invention Ia with a toner and fixing the toner image onto the surface of the organophotoreceptor. Such a process does not require transferring the toned image to another substrate as recited in the process of Invention II.

Inventions II and Ib (apparatus) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process of Invention II can be practiced by hand.

Inventions Ic (compound) and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions and different effects. Invention II is drawn to a process that comprises the steps of charging and imagewise exposing an organophotoreceptor to form a charge pattern, developing the charge pattern with a toner to form a toner image, and transferring the toner image to a substrate. Invention Ic (compound) is drawn to a compound, which can be used in compositions other than an

organophotoreceptor, such as a charge transport material in an electroluminescence device.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Kam Law (Reg. No. 44,205) on Oct. 25, 2004, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14 and 23-26. Affirmation of this election must be made by applicants in replying to this Office action. Claims 15-22 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Claims 1-14 are directed to an allowable product for the reasons discussed in paragraph 16, infra. Pursuant to the procedures set forth in the Official Gazette notice dated March 26, 1996 (1184 O.G. 86), claims 15-22, which are directed to the process of using the patentable product, previously withdrawn from consideration as a result of a restriction

requirement, have been hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Since all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, the restriction requirement previously made in this the Office action has been hereby withdrawn.

5. The abstract of the disclosure is objected to because it is not limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

Applicants are reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The disclosure is objected to because of the following informalities:

(1) The use of trademarks, e.g., Melinar [sic: MELINAR] at page 10, line 23, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

(2) The typographic error at page 25, line 16, "repeatedwith" should be rewritten as -- repeated with --.

Appropriate correction is required.

7. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In instant claims 2, 9, 16, and 24, the recitation "X is CH_2CH_2" lacks antecedent basis in the specification. The only

related disclosure is at page 20 of the specification, which shows two particular compounds where X is $-CH_2CH_2-$. The recitations in claims 2, 9, 16, and 24 are broader than the two disclosed particular compounds, where X is $-CH_2CH_2-$, V is $-O-CH=CH_2$, R_1 is phenyl, R_2 is H, and Z is a particular carbazole or a p-N,N-diphenylaminophenylene, because they include compounds that are not the two particular compounds, such as when R_1 is either H or an alkyl group, or R_2 is either an alkaryl or an aryl group.

(2) In instant claims 3, 10, 17, and 25, the recitation "V is $O-CH_2=CH_2$ [sic: $-O-CH=CH_2$]" lacks antecedent basis in the specification. See page 20 of the specification, which shows two particular compounds where the group V is $-O-CH=CH_2$. The recitations in claims 3, 10, 17, and 25 are broader than the two disclosed particular compounds, where the V is $-O-CH=CH_2$, X is $-CH_2CH_2-$, R_1 is phenyl, R_2 is H, and Z is a particular substituted carbazole or a p-N,N'-diphenylaminophenylene, because they include compounds that are not the two particular compounds, such as when R_1 is either H or an alkyl group, or R_2 is either an alkaryl or an aryl group.

8. Claims 3, 10, 17, and 25 are objected to because of the following informalities:

Claims 3, 10, 17, and 25 incorrectly adds an additional hydrogen atom in the chemical moiety "O-$\underline{CH_2}$=CH_2" (emphasis added) such that said moiety comprises a pentavalent carbon atom. The chemical moiety should be rewritten as "-O-$\underline{CH}$=CH_2" (emphasis added).

Appropriate correction is required.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

12. The term "a vinyl ether group" recited in the instant claims is not defined in the instant specification. As shown at page 620 of Grant & Hackh's Chemical Dictionary, 5th edition, the term "vinyl" is defined as the "radical $-CH{:}CH_2$, from ethylene". The term "ethers" is defined as "compounds of general formula R-O-R." R is defined as a "monovalent radical." See Grant & Hackh's Chemical Dictionary, pp. xiii and 221. Thus, given the broadest reasonable interpretation, the term "a vinyl ether group" refers to any group that comprises both a vinyl group and an ether group. Rejections based on this interpretation are set forth infra.

13. Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by US 6,416,915 B1 (Kikuchi).

Kikuchi discloses the hole (i.e., charge) transport hydrazone compound 242 at cols. 81-82. The compound 242 comprises two chain-polymerization functional groups $-O-CH_2-CH=CH_2$. Compound 242 is within the compositional limitations of the formula recited in instant claim 23.

Compound 242 is represented by the formula recited in instant claim 23, when Z is the p-N,N-disubstitued-aminophenylene group shown in compound 242, R_2 is H, R_1 is naphthyl, X is phenylene, and X is $-O-CH_2-CH=CH_2$. The group $-O-CH_2-CH=CH_2$ meets the definition of the term "a vinyl ether group" recited in instant claim 23, for the reasons discussed in paragraph 12 above. The phenylene group meets the definition of X recited in instant claim 23, when X is of the formula $-(CH_2)-$ and "one or more of the methylene groups is optionally replaced by . . . an aromatic group."

14. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi.

Kikuchi discloses the hole transport compound 242 as described in paragraph 13, which is incorporated herein by reference.

Kikuchi does not exemplify a hole transport compound as represented by the formula recited in instant claim 24 where the group X is an alkylene group, such as $-CH_2CH_2-$ as recited in instant claim 24. The compound 242 comprises the hole transport group represented by formula (5) disclosed at col. 4, lines 1-11, where n^1 is 0, the group Ar^4 is naphthyl, and the group R^{14} is phenyl that is p-substituted with the group $-O-CH_2-$

$CH=CH_2$. However, Kikuchi discloses that the phenyl group that is p-substituted with the chain-polymerization group $-O-CH_2-CH=CH_2$ may equally be a similarly substituted alkyl group. Col. 4, lines 7-10, which discloses that the group R^{14} in formula (5) can denote an "alkyl group, aralkyl group, or aryl group, each capable of having a substitutent, or a hydrogen atom." Kikuchi exemplifies compounds where the group R^{14} is methyl. See compounds 220 and 221 at cols. 75-76. Kikuchi discloses that a hole transport compounds comprising at least two chain-polymerization functional groups, i.e., compound 242, forms a polymerizate. According to Kikuchi, when a surface layer in an electrophotographic photoreceptor comprises said polymerizate, the photoreceptor has high film strength leading to improved anti-abrasion and anti-scar characteristics. Col. 2, lines 52-56, and col. 3, lines 5-23.

Kikuchi does not exemplify a hole transport compound comprising the hole transport group of formula (5) where the group R^{14} is an ethyl group substituted with a chain-polymerization functional group. However, as discussed above, Kikuchi teaches that the group R^{14} may be a substituted alkyl group or a substituted aryl group, where the substituent is a chain-polymerization functional group, as shown in compound 242. Kikuchi teaches that those hole transport compounds comprising

the hole transport groups of formula (5) are capable of forming a polymerizate that when used in the surface layer of a photoreceptor improves the mechanical properties of the photoreceptor. Thus, based on the teachings in Kikuchi, a person having ordinary skill in the art would expect, reasonably, that the properties of the hole transporting compound 242, where the phenyl group that is p-substituted with the chain-polymerization functional group $-O-CH_2-CH=CH_2$ is replaced with either a similarly chain-polymerization functional group substituted methyl or ethyl group, would be similar to the hole transporting compound 242.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kikuchi, to substitute the phenyl group that is p-substituted with the chain-polymerization group $-O-CH_2-CH=CH_2$ in the hole transporting compound 242 with a similarly chain-polymerization functional group substituted ethyl group, because that person would have had a reasonable expectation of successfully obtaining a hole transporting compound comprising at least two chain polymerization functional groups that is capable of forming a polymerizate which when used in the surface of an electrophotographic photoreceptor improves the anti-abrasion and anti-scar characteristics of the photoreceptor.

15. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi.

Kikuchi discloses the hole transport compound 242, as described in paragraph 13, which is incorporated herein by reference.

Kikuchi does not exemplify a hole transport compound as represented by the formula recited in instant claim 25 where the group V is $-O-CH=CH_2$, and the group X is $-CH_2CH_2-$. The compound 242 comprises the hole transport group represented by formula (5) disclosed at col. 4, lines 1-11, where n^1 is 0, the group Ar^4 is naphthyl, and the group R^{14} is phenyl that is p-substituted with the group $-O-CH_2-CH=CH_2$. However, Kikuchi teaches that the phenyl group that is p-substituted with the group $-O-CH_2-CH=CH_2$ may equally be a similarly substituted alkyl group. Col. 4, lines 7-10, which discloses that the group R^{14} in formula (5) can denote an "alkyl group, aralkyl group, or aryl group, each capable of having a substitutent, or a hydrogen atom." Kikuchi exemplifies compounds where the group R^{14} is methyl. See compounds 221 and 222 at cols. 75-76. Kikuchi also teaches that the chain-polymerization functional groups can equally be the chain-polymerization functional group $-CH_2-O-CH=CH_2$. See col. 5, line 63. Kikuchi discloses that a hole transporting compounds

comprising at least two chain polymerization functional groups, i.e., compound 242, forms a polymerizate. According to Kikuchi, when a surface layer in an electrophotographic photoreceptor comprises said polymerizate, the photoreceptor has high film strength leading to improved anti-abrasion and anti-scar characteristics. Col. 2, lines 52-56, and col. 3, lines 5-23.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kikuchi, to substitute the phenyl group that is p-substituted with the chain polymerization functional group $-O-CH_2-CH=CH_2$ in the hole transporting compound 242 with a methyl group that is substituted with the equivalent chain-polymerization functional $-CH_2-O-CH=CH_2$ and to also substitute the second chain-polymerization functional group $-O-CH_2-CH=CH_2$ in the compound with the equivalent chain-polymerization functional group $-CH_2-O-CH=CH_2$, such that resulting hole transporting compound comprises the group $-CH_2CH_2-O-CH=CH_2$ attached directly to the nitrogen atom in the hydrazone moiety, "-N-N=CH-" (emphasis added), and where the two chain-polymerization groups in the compound are $-CH_2-O-CH=CH_2$, because that person would have had a reasonable expectation of successfully obtaining a hole transporting compound comprising at least two chain polymerization functional groups that is capable of forming a

polymerizate which when used in the surface of an electrophotographic photoreceptor improves the anti-abrasion and anti-scar characteristics of the photoreceptor.

16. Claims 1, 2, 4-9, 11-16, and 18-22 are allowable over the prior art of record.

Claims 3, 10, and 17 would be allowable if rewritten or amended to overcome the objection set forth in this Office action.

Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggest an organophotoreceptor comprising the charge transport material as recited in the instant claims 1-22. Nor does the prior art teach or suggest the compounds recited in instant claim 26.

US Patent Application Publication 2004/0081903 A1 (Tokarski) discloses an organophotoreceptor comprising a charge transport hydrazone compound represented by the formula disclosed in paragraphs 0007-0009. See also the particular compounds disclosed at pages 9 and 10. The hydrazone compound disclosed by Tokarski is similar to the hydrazone compound

recited in the instant claims. However, the hydrazone compound disclosed by Tokarski comprise an epoxy group attached via a linking group to the nitrogen atom of the hydrazone group, "-N-N=CH-" (emphasis added), not to a vinyl ether group as required in the hydrazone compounds recited in the instant claims. The hydrazone compounds disclosed in Tokarski do not meet the limitations of the formula recited in instant claims 1, 8, 15, and 26.

US 4,567,126 (Emoto) discloses an organophotoreceptor comprising a charge transport hydrazone compound. Col. 1, line 62, to col. 2, line 40, and for example, compounds 25 and 26 at col. 11. The hydrazone compound disclosed by Emoto is similar to the hydrazone compound recited in the instant claims. However, the hydrazone compound disclosed by Emoto comprise a propenyl group, i.e., $-CH_2-CH=CH_2$, attached directly to the nitrogen atom of the hydrazone group, "-N-N=CH-" (emphasis added), not to a group comprising a vinyl ether group, as required in the hydrazone compounds recited in the instant claims. The hydrazone compounds disclosed in Emoto do not meet the limitations of the formula recited in instant claims 1, 8, 15, and 26.

Kikuchi discloses a charge transport hydrazone compound that meets the compositional limitations of the formula recited

in instant claims 1, 8, 15, and 23, and renders obvious a charge transport hydrazone compound that meets the compositional limitation of the formula recited in instant claims 2, 3, 9, 10, 16, 17, 24, and 25. See paragraphs 13-15, supra. However, as discussed in paragraphs 14 and 15 above, Kikuchi discloses that the surface layer of a photoreceptor comprises the polymerizate of said charge transport compounds. The resulting polymerizate in the photoreceptor would not comprise the compound of the formula recited in instant claims 1-22. Nor does Kikuchi teach or suggest the compounds recited in instant claim 26. As discussed in paragraphs 13-15, Kikuchi requires that its hole transport compound comprise at least two chain-polymerization functional groups. The compounds recited in instant claim 26 comprise only one functional group.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JANIS L. DOTE
PRIMARY EXAMINER
GROUP ~~1500~~ 1700

JLD
Oct. 28, 2004